

We claim:

sub
C13
1. A flexible sensor for wirelessly determining a physical property of a patient, which sensor comprises a self-contained resonant circuit comprising a capacitor and an inductor, wherein the circuit is variable in response to the physical property of the patient, and wherein the sensor is sufficiently flexible to be folded for delivery percutaneously.

2. The sensor of Claim 1, wherein the capacitor is variable in response to the physical property of the patient.

3. The sensor of Claim 1, wherein the inductor is adapted to allow inductance of a current in the resonant circuit when the sensor is subjected to a time-varying electromagnetic field.

4. The sensor of Claim 1, wherein the physical property is pressure or temperature.

5. The sensor of Claim 4, wherein the physical property is pressure.

6. The sensor of Claim 5, wherein the pressure is the pressure within a vascular aneurysm.

7. The sensor of Claim 5, wherein the pressure is the pressure in a chamber of the patient's heart.

8. The sensor of Claim 1, wherein the sensor is disk-shaped.

9. The sensor of Claim 8, wherein the sensor has one or more metallic members attached to a flat surface of the sensor.

10. The sensor of Claim 8, wherein the sensor has one or more metallic members layered within the sensor.

11. The sensor of Claim 8, wherein the sensor has a metallic ring surrounding a portion of the edge of the sensor.

12. The sensor of Claim 8, wherein the sensor has an anchoring system attached to a flat surface of the sensor.

13. The sensor of Claim 12, wherein the anchoring system is a coil.

14. The sensor of Claim 12, wherein the anchoring system has a projection with umbrella-like radial projections.

15. The sensor of Claim 1, wherein the sensor has one or more cut-outs to facilitate folding.

16. The sensor of Claim 1 or 15 which can be folded into a Z-shape.

17. The sensor of Claim 1 or 15 which can be folded into a U-shape.

18. The sensor of Claim 1, wherein a safety wire is attached to one surface of the sensor.

19. The sensor of Claim 18, wherein the safety wire has a sheath.

20. The sensor of Claim 19, wherein the sheath can be slid distally to free the safety wire from the sensor.

21. The sensor of Claim 18, wherein the safety wire is attached to the sensor at an adhesive point.

22. The sensor of Claim 21, wherein the adhesive point comprises an epoxy or a cyanoacrylate material.

23. The sensor of Claim 1, wherein the primary material of construction is flexible, biocompatible polymer or co-polymer.

24. The sensor of Claim 23, wherein the polymer or co-polymer is selected from the group consisting of polyimide, polyethylene terephthalate, polytetrafluoroethylene, and co-polymers thereof.

25. The sensor of Claim 1, wherein there are no conductive connections or via holes to provide a direct electrical conduit between the upper inductor coil and the lower inductor coil.

26. The sensor of Claim 1, which contains a micromachined diode and responds in a non-linear manner to an excitation signal.

27. The sensor of Claim 1, wherein the capacitance is distributed across an array of smaller capacitors.

LAB

28. The sensor of Claim 1, wherein the sensor has a loading tab member.

29. The sensor of Claim 1 which can be folded so that a middle section remains substantially flat and the outer edges or surfaces are at substantially a 90° angle to said middle section.

30. The sensor of Claim 29, which is substantially daisy-shaped.

31. A sensor delivery system comprising
a sensor of Claim 1, and

a delivery catheter comprising an inner tubular member having an outer surface and an outer tubular member having an inner surface,

wherein the sensor is contained in an annular space defined by the outer surface of the inner tubular member and the inner surface of the outer tubular member.

32. The delivery system of Claim 31, wherein the outer tubular member can be slid in the proximal direction to release the sensor.

33. The delivery system of Claim 31, wherein the delivery catheter has an atraumatic tip.

34. The delivery system of Claim 33, wherein the atraumatic tip is attached to the distal end of the inner tubular member.

35. The delivery system of Claim 31 which comprises an annular stop proximal to the sensor in the annular space.

36. The delivery system of Claim 31, wherein there are one or more recesses in the delivery catheter such that several sensors can be contained within the catheter.

37. The delivery system of Claim 31, wherein the sensor of Claim 1 has a safety wire attached thereto and said safety wire extends proximally in a longitudinally extending

groove in the inner surface of the outer catheter, the outer surface of the inner catheter, or both.

38. The delivery system of Claim 31 which has more than one sensor of Claim 1 and each sensor is tuned to operate at a different resonant frequency.

39. The delivery system of Claim 38 which has two or three sensors.

40. The delivery system of Claim 39 which has two sensors.

41. The delivery system of Claim 39 which has three sensors.

42. The delivery system of Claim 31, wherein the sensor is in a curved configuration within the delivery catheter.

43. The delivery system of Claim 31, where the sensor is in a Z-shaped configuration within the delivery catheter.

44. The delivery system of Claim 31, where the sensor is in a U-shaped configuration within the delivery catheter.

45. The delivery system of Claim 31, wherein the inner catheter has a longitudinally extending lumen so that the delivery system can be slidably positioned over a guidewire.

46. A sensor delivery system comprising:

a sensor of Claim 1; and

a delivery catheter comprising an inner tubular member having an outer surface and an outer tubular member having an inner surface,

wherein the sensor is contained in an annular space defined by the outer surface of the inner tubular member and the inner space of the outer tubular member, wherein the sensor has a tab member that engages a reciprocal slot in the inner tubular member, wherein the outer tubular member has a slit, and wherein rotation of the inner tubular member causes the sensor to advance through the slit.

47. The delivery system of Claim 46, wherein the inner catheter has a longitudinally extending lumen so that the delivery system can be slidably positioned over a guidewire.

48. A sensor delivery system comprising:

5 a sensor of Claim 1,

an outer catheter having at least one lumen and a distal open end, and

an inner cylindrical member,

wherein the sensor is folded within the distal end of the outer catheter and the inner cylindrical member pushes the folded sensor out at a desired location.

10 49. The delivery system of Claim 48, wherein the inner catheter has a longitudinally extending lumen so that the delivery system can be slidably positioned over a guidewire.

50. A hand-held electronic read-out device that can be used to determine the pressure within a body cavity by determining the resonant frequency of an implanted sensor.

15 51. The read-out device of Claim 50, wherein the resonant frequency of multiple implanted sensors can be determined.